



Drought Vulnerability of the Hungarian Great Plain – Solutions by water prevention DMCSEE, Drought Management Centre for Southeastern Europe

In the years after our EU accession, we began a new fight against drought that we have presented within DMCSEE project implemented as „pilot” projects carried out by ATI-VIZIG. These results can be disseminated widely all over the European drought affected regions. Some model projects were implemented or are under implementation with professional management of ATI-VIZIG.

Complex water prevention programme in the river-system of Nagyszéksós-tó

Background:

The Homokhátság between the River Danube and the River Tisza is the most stricken area of Hungary by **aridity and drought**. Water surplus-, **inland waters**-, and drought-periods in the Southern-Great Plain region cause problem. **Water resources decreased** according to the drought in the project affected Homokhát sub-region (**underground water-levels** sank down, **surface outflow** reduced), water supply of sodic habitat is inadequate. Within this the endangerment of the southeastern slope of the Homokhát sub-region is significantly increased, because **traditionally high-quality agriculture** got acclimatized there.

Due to the drought the degradation of the high-value natural and built environmental elements has begun in the area, Nagyszéksós-tó with its 125 hectare close to Mórahalom is also affected by the damage.

Alsó-Tisza vidéki Környezetvédelmi és Vízügyi Igazgatóság worked out a complex development plan to solve the problem; the implementation was helped by regional application resources.

The Directorate handed in an application to the resources of the Southern-Great Plain Operational Programme with the title of „Complex water prevention programme in the river system of Nagyszéksós-tó”.

The DAOP high-priority project was accepted by a 171 billion HUF budget (ERDF 75%, national co-financing 25%).

Problems to be solved and the content of the project:

Location of the project is Nagyszéksós-tó, which is located to the south-east of Mórahalom city, and the connected water systems, which are relevant in terms of the town's and the surroundings settlements' daily life.

The Széksóstó main channel forwards the water coming from the town into two directions: to the south direction towards Serbia through a main channel, and into the south-eastern direction through a main channel to the Nagyszéksós-tó reservoir.

The capacity of the drainage system towards Serbia is not satisfactory, during the project implementation the reconstruction of some part of the inland water drain system have been



executed, some parts of the drainage system elements have been rebuilt, increasing the capacity of the drain system.

The reservoir, built on the area of Nagyszéksós-tó, is the dominant element of this drainage route. This reservoir is able to hold and keep more than **1.2 billion m³ surplus water**.

The maintenance of the during more centuries existing water habitats of Nagyszéksós-tó reservoir meets with difficulties, because the drought periods appear more often and last longer due to the global warming. The essential conditions of the aquatic ecosystem deteriorate significantly in the prolonged drought periods, biodiversity of the area decreases.

Water replacement, needed to maintain the water habitats, shall be assured in the drought period; the implemented project offers a solution for that: the suitably cleared **grey water** originating from the area comes from the sewage purification system of Mórahalom is forwarded to the lake, with the help of a newly built rising main; solving thus the necessary water supply and saving the water habitats of the Nagyszéksós-tó reservoir. During the development **wet-land** was being established to the after-purification of the water coming from the sewage purification system.

Main elements of the project:

Name of the Project phase	Short description
1. Building the water replacement system of Nagyszéksós-tó	Forwarding the settlements' grey water into the reservoir, building the connecting wet-land
2. Reconstructing the internal area of the reservoir	Implementing the water replacement route within the reservoir, necessary landscaping
3. Rebuilding the elements belonging to the connecting drainage routes	Rebuilding the connecting main channels and their structures

Success factors

suitably cleared grey water reuse
maintain water habitats
development wet-land
decrease inland inundation

Repeatability & Applicability

Complex development plan to solve the problem, with grey water reuse.

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Frank Szabolcs
okl. mérnök



Figure 1: Water retention works



Figure 2: Water retention reservoir